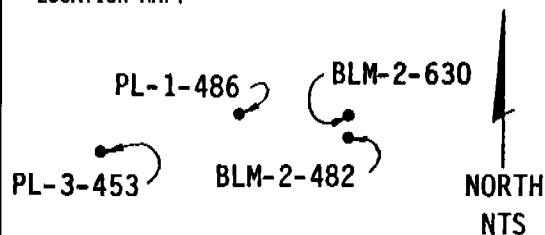


LITHOLOGIC LOG

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LOCATION MAP:



NW 1/4 NW 1/4 NW 1/4 SE 1/4 S 5 T 21S R 3E

SITE ID: NASA-WSTF LOCATION ID: PL-3-453

SITE COORDINATES (ft.):

N 225366.27 E 400579.73

GROUND ELEVATION (ft. MSL): 4496.89 (BRASS CAP)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: Mud/Air Foam Rotary

DRILLING CONTR.: Larion

DATE STARTED: 24 October 1988 DATE COMPLETED: 9 November 1988

FIELD REP.: P.S. Egan, J.P. Kaszuba

COMMENTS: Mud rotary, 0'-89'. 12 1/4" pilot hole reamed to 16", 0'-85'. Air Foam rotary with 9 7/8" bit, 90'-297'. Bedrock not reached. Total Depth (TD): 497'. Drift survey: 9.5 ft.

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings 0'-497'	0'-90' Clay-Rich Alluvium (Santa Fe Group): Moderate yellowish brown (10YR 5/4); cuttings range in size from <.004 to .06 inches, are small thin flakes to blocky clasts, and are poorly to moderately-sorted. Natural grains consist of fine to medium-grained sand and silt. The lithology is an unconsolidated, clay-rich, gravelly, polygenetic conglomerate. Much of the clay contains fine-grained sand and silt and the percentage of pure clay increases towards the bottom of the interval. Alluvial clasts consist of limestone, rhyolite, quartzite, siltstone, granite, and minor amounts of sandstone, described in further detail below.
5	=====++		38		
10	=====++//		42		
15	=====++//		35		
20	=====++		33		
25	=====++V		61		
30	=====++		49		30'-35' Gravelly interval.
35	=====++V//		40		
40	=====++//		24		40'-45' Large amount of fine-grained sand present in clay.
45	=====++V//		42		
50	=====		40		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
50			40		
55			30		
60			41		
65			22		
70			35		
75			56		
80			49		
85			33		
90			28		
95	=====+V		5		
100	=====+V		5		
105	=====+V		4		
110	=====+V		3		
115	=====+V		3		
					90'-497' Gravelly Alluvium (Santa Fe Group): Grayish black (N2) to medium light gray (N6) when wet. Cuttings range in size from less than .1 inches to 2 inches, are angular flakes to blocky clasts, and are poorly to moderately sorted. Natural grains are clay, silt and fine- to coarse-grained sand. The alluvium is unconsolidated but becomes more indurated with depth (general increase in drill time with depth). The lithology is an unconsolidated to semi-consolidated, gravelly to boulder (bit behavior), polygenetic conglomerate. Thick clay layers occur throughout the upper section of the alluvium. Driller comments alluvium is hard, consistent, and fractured. Cutting lithologies are grayish black (N2) to medium light gray (N6) micritic limestone with occasional calcite-filled fractures; white (N9) to moderate red (5R 5/4) rhyolite that exhibits iron oxidation rims around phenocrysts of pyrite; dusky red (5R 3/4) to grayish olive (10Y 4/2) siltstone; moderate red (5R 4/6) granite; transparent quartz; medium gray (N5) and grayish purple (5P 4/2) porphyritic andesite containing euhedral to subhedral phenocrysts of white plagioclase frequently altered to moderate yellow green (5GY 7/4) epidote; and minor amounts of sandstone and caliche.
					90'-235' Replace Frank's mud rotary with CP air rotary drilling rig. Samples from air drilling are not exhibiting the gross amounts of clay as did the first 90' of samples from mud rotary drilling. Clay seems to be distributed throughout most samples and diminishes to less than 10% by 235'.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
115	=====+=====		3		
120	=====+=====		3		
125	=====+=====		3.5		
130	=====+=====V		4.5		
135	=====+=====V		3		
140	=====+=====V		3		
145	=====+=====V		3		
150	=====+=====V		3		
155	=====+=====V		4		
160	=====+=====V		3		
165	=====+=====V		4		
170	=====+=====V		3.5		
175	=====+=====V		3		
180	=====+=====		3		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
180	=====+++++		3		
185	=====+++++V: //		3.5		185'-497' Average grain size has decreased to .1 inch.
190	=====+++++V: //		5		185'-190' First occurrence of purple andesite in cuttings (only a few grains).
195	=====+++++V: //		3.5		195'-200 Observed a clast of limestone cemented with caliche to a larger limestone clast. Observe caliche in cuttings. First occurrence of grey andesite.
200	=====+++++V: //		3		200'-205' Notable amount of sand present in samples.
205	=====+++++V: //		3		
210	=====+++++V: //		3		
215	=====+++++V: //		3		
220	=====+++++V: //		2.5		
225	=====+++++V: //		4		
230	=====+++++V: //		5		
235	+++++V: //		3		235'-497' Clay in samples has diminished to less than 10%.
240	+++++V: //		2.5		
245	+++++V: //		4.5		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
245	+++++V//		4.5		
250	+++++V//		4		
255	+++++V//		5		
260	+++++V//		8		260'-290' Samples contain abundant fine-grained sands.
265	+++++V//		4.5		
270	+++++V//		3		
275	+++++V//		5		
280	+++++V//		5		
285	+++++V//		3.5		
290	+++++V//		6		
295	+++++V//		4		
300	+++++V//		5		
305	+++++V//		4		
310	+++++V//		5		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
310	+++++vvv//		5		
315	+++++vvv//		4		
320	+++++vvv//		8		
325	+++++vvv//		6		
330	+++++vvv//		4		
335	+++++vvv//		5		
340	+++++vvv//		3.5		
345	+++++vvv//		3		
350	+++++vvv//		4		
355	+++++vvv//		4		
360	+++++vvv//		4		
365	+++++vvv//		5		
370	+++++vvv//		6		370'-375 Limestone exhibits calcite-filled fractures.
375	+++++vvv//		5		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
375	+++++VVV//		5		
380	+++++VVV//		3		
385	+++++VVV//		4.5		
390	+++++VVV//		3		
395	+++++VVV//		5		
400	+++++VVV//		6.5		
405	+++++VVV//		4.5		
410	+++++VVV//		5		
415	+++++VVV//		4		
420	+++++VVV//		4		420'-497' The percentage of both gray and purple andesite in cuttings gradually increasing.
425	+++++VVV//		7		
430	+++++VVV//		4		
435	+++++VVV//		4		
440	+++++VVV//		7		

